UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,006	07/09/2003	Luca Rigazio	9432-000241	1026

27572   7590   01/28/2008
HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER
JACKSON, JAKIEDA R

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
01/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/616,006	RIGAZIO ET AL.
	Examiner	Art Unit	
	Jakieda R. Jackson	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/7/07*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-2, 4-22 and 24-42* is/are rejected.
7)☐ Claim(s) *3 and 23* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   In response to the Office Action mailed August 7, 2007, applicant submitted an amendment filed on November 7, 2007 in which the applicant amended and requested reconsideration.

Response to Arguments

2.   Applicant argues that there is no teaching that the automatic speech recognition result of one speaker is used to improve automatic speech recognition of another speaker. Applicant's arguments are persuasive. However, it should be noted that throughout the 16 pages of remarks Applicant continuously argues that each of the prior art cited teaches away from the claimed invention. However a prior art reference that "teaches away" from the claimed invention is a significant factor to be considered in determining obviousness; however, "the nature of the teaching is highly relevant and must be weighted in substance. A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994)....The court held the claims would have been obvious over prior art because the reference taught epoxy resin based material was useful for applicant's purpose, applicant did not distinguish the claimed epoxy from the prior art epoxy, and applicant asserted no discovery beyond what was known in the art. Furthermore, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize,

discredit, or otherwise discourage the solution claimed..." In re Fulton, 391 F.3d 1195,

1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). Arguments that alleged anticipatory

prior art teaches away from the invention is not germane to a rejection under section

102. A reference is no less anticipatory if, after disclosing the invention, the reference

then disparages it. The question whether a reference teaches away from the invention

is inapplicable to an anticipation analysis.

Applicant further argues that the term "language models" is a well known term in

the art, and that the Examiner continues to fail to accord the term "language models" to

its appropriate meaning. For the record, the term "language model", which is well

known in natural language applications such as speech recognition is associated with a

document in a collection and is ranked based on the probability that the documents

language model would generate the term of the input query. For example, as pointed

out in the office action filed November 7, 2007, Arnold teaches language models

(column 5, paragraphs 0061-0066 and column 6, paragraphs 0071 and 0080-0082), so

it is uncertain whether or not the Applicant knows the meaning of the term "language

model".

Applicant further argues that the Examiner relies on Skerpac paragraph 0050 to

teach a biometric security system in which training speech is obtained with a high

quality microphone so that this "reference speech" can later be used to verify identity of

the same speaker supplying speech by a lower quality microphone. Applicant argues,

however, that paragraph 0050 teaches ensuring that all channels are of high quality.

Applicant arguments are persuasive, but are moot in view of new grounds of rejections.

Applicant further argues that Suhm et al. does not teach any agent speech recognition derived input to language models employed to recognize caller speech. However, Suhm teaches that a speech recognition system may be optionally included to enable the program to run interactively in response to the caller's spoken words. Besides, it is well known in the art of speech processing that a speech recognition system has a signal processing module that takes the digitized samples and convert them into a series of patterns. These patterns are then compared to a set of stored models that have been constructed from the knowledge of acoustic language and dictionaries (pg. 690 of Newton's Telecom Dictionary). Therefore, Applicants arguments are not persuasive.

Applicant argues that speaker verification is a wholly different operation than speech recognition, and the use of the reference is respectfully challenged as not being directed toward the art speech recognition; the speaker model developed by Skerpac is not used to recognized speech of the speaker at a later time. Also, the speaker according to the teachings of Skerpac is the same person, so Skerpac cannot fairly be viewed as contemplating using speech recognition results of a first speaker to improve recognition of speech of a second speaker interacting with the first speaker. However, Skerpac is used to teach speech biometric.

Applicant further argues that Arnold teaches an interaction between a user and a distributed system, however, according to the newly cited prior art, that combination of the references are used to teach the interaction between speakers.

Applicant also argues that De Bellis teaches an interaction between a user and a

automated system, however, according to the newly cited prior art, that combination of

the references are used to teach the interaction between speakers.

Claim Objections

3.   Claim 42 is objected to because of the following informalities:

- Claim 42 depends upon itself, however, has been interpreted to depend upon

   claim 41.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   **Claims 1-2, 4, 6-22, 24 and 26-42** are rejected under 35 U.S.C. 102(e) as being

anticipated by Peterson et al. (USPN 6,922,466), hereinafter referenced as Peterson.

Regarding **claims 1 and 21**, Peterson discloses a speech data mining (mining; column 19, line 59 – column 20, line 21 and column 40, line 57 – column 41, line 4) system and method, hereinafter referenced as a system for use in generating a rich transcription having utility in call center management, comprising:

a speech differentiation module (speaker change detector) differentiating between speech of at least two interacting speakers (column 20, lines 3-57);

a speech recognition module (speech recognizer) improving automatic recognition of speech of a second speaker based on interaction of the second speaker with a first speaker preferentially employed as a reference speaker (column 20, lines 3-57); and

a transcript generation module (annotations) generating a rich transcript based at least in part on recognized speech of the second speaker (column 8, lines 1-6 and column 19, lines 3-23 with column 34, lines 46-59 and column 40, line 57 – column 41, line 4).

Regarding **claims 2 and 22**, Peterson discloses a system wherein said speech differentiation module is adapted to receive speech input from the first speaker on a first channel (telephone lines), to receive speech input from the second speaker on a second channel, and to differentiate between the first speaker and the second speaker (telephone handset; column 11, lines 15-43) by identifying speech of the first speaker with speech received on the first channel, and identifying speech of the second speaker with speech received on the second channel (caller and live agent; column 22, lines 15-25).

Regarding **claims 4 and 24**, Peterson discloses a data mining system wherein said speech recognition module is adapted to employ the first speaker (first speaker) as the reference speaker based on availability of a speech model (speaker model) adapted to the first speaker (column 20, lines 42-50).

Regarding **claims 6 and 26**, Peterson discloses a system wherein said speech recognition module is adapted to identify a topic with respect to which the speakers are interacting (topic detector), and to employ a focused language model (statistical model) to assist in speech recognition based on the topic (column 20, line 42 – column 21, line 19).

Regarding **claims 7 and 27**, Peterson discloses a system wherein said speech recognition module is adapted to receive an explicit topic selection from one of the speakers (topic; column 20, line 42 – column 21, line 19).

Regarding **claims 8 and 28**, Peterson discloses a system wherein said speech recognition module is adapted to prompt a speaker corresponding to a call center customer to explicitly select one of a plurality of predetermined topics by pressing a corresponding button of a telephone keypad (touch-tone; column 14, lines 49-66).

Regarding **claims 9 and 29**, Peterson discloses a system wherein said speech recognition module is adapted to identify a predetermined topic associated with an electronic form selected by call center personnel (call center's; column 14, lines 49-66).

Regarding **claims 10 and 30**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition

result of at least one of the interacting speakers, and to identify a predetermined topic
based on the keyword (topic detector; column 20, line 42 – column 21, line 10).

Regarding **claims 11 and 31**, Peterson discloses a system wherein said speech
recognition module is adapted to extract context from a speech recognition result of the
first speaker, and to employ the context extracted from the speech recognition result of
the first speaker as context in a language model (statistical models) utilized to assist in
recognizing speech of the second speaker (column 20, line 3 – column 21, line 19).

Regarding **claims 12 and 32**, Peterson discloses a system wherein said speech
recognition module is adapted to extract at least one keyword from a speech recognition
result of the first speaker (word), and to supplement a constraint list (stock) used in
recognizing speech of the second speaker based on the keyword extracted from the
speech recognition result of the first speaker (column 20, line 58 – column 21, line 10).

Regarding **claims 13 and 33**, Peterson discloses a system wherein said speech
recognition module is adapted to extract at least one keyword from a speech recognition
result of the first speaker (word), and to rescore recognition candidates generated
during recognition of speech of the second speaker based on the keyword extracted
from the speech recognition result of the first speaker (column 20, line 58 – column 21,
line 10).

Regarding **claims 14 and 34**, Peterson discloses a system wherein said speech
recognition module is adapted to detect interruption of speech of one speaker by
speech of another speaker (speaker change detector), and to employ the interruption as

context in a language model (statistical model) utilized to assist in recognizing speech of the second speaker (column 20, line 2 - column 21, line 19).

Regarding **claims 15 and 35**, Peterson discloses a system wherein said speech recognition module is adapted to detect an interruption of speech of one speaker by speech of another speaker (speaker change detector), and to record an instance of the interruption as mined speech data (mining; column 20, line 2 - column 21, line 19).

Regarding **claims 16 and 36**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of at least one of the interacting speakers, to identify a frustration phrase associated with the keyword, and to record an instance of the frustration phrase as mined speech data (frustration; column 21, lines 10-19).

Regarding **claims 17 and 37**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of at least one of the interacting speakers, to identify a polity expression associated with the keyword (polite), and to record an instance of the polity expression as mined speech data (column 21, lines 10-19).

Regarding **claims 18 and 38**, Peterson discloses a system wherein said speech recognition module is adapted to extract at least one keyword from a speech recognition result of at least one of the interacting speakers, to identify a context corresponding to at least one of a topic (topic), complaint, solution, and resolution associated with the keyword, and to record an instance of the context as mined speech data (column 21, lines 10-19).

Regarding **claims 19 and 39**, Peterson discloses a system wherein said speech recognition module is adapted to identify a number of interaction turns based on a shift in interaction from speaker to speaker (marks speakers turn), and to record the number of turns as mined speech data (column 20, lines 3-51).

Regarding **claims 20 and 40**, Peterson discloses a system comprising a quality management subsystem employing mined speech data as feedback to at least one of a call center quality management process and a consumptible quality management process (quality; column 11, line 57 – column 12, line 42 and column 19, line 24 – column 20, line 21).

Regarding **claim 41**, Peterson discloses a system wherein said speech recognition module is adapted to employ an interactive focused language model in which yes/no questions relate to context of at least one of preceding or subsequent speech of another interacting speaker (was the call resolved; column 19, lines 3-14).

Regarding **claim 42**, Peterson discloses a system wherein said speech recognition module improves automatic recognition of the speech of the second speaker by employing previous and subsequent (tabulating) and recognized words of the speaker in addition to context of previous and subsequent interactions (interaction) with the referenced speaker (column 2, line 54 – column 3, line 4).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   **Claims 5 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Peterson in view of Liu et al. (PGPUB 2004/0204939), hereinafter referenced as

Liu.

Regarding **claims 5 and 25**, Peterson discloses a data mining system, but does

not specifically teach a system wherein speech differentiation module is adapted to use

speech biometric.

Liu discloses a system and method for speaker change detection comprising:

use a speech biometric trained on speech of the first speaker to distinguish

between speech of the first speaker and speech of another speaker (biometrics

mechanism; paragraph 0041), to improve speaker change detection.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Peterson's system wherein speech

differentiation module is adapted to use speech biometric, as taught by Liu, to provide

fast speaker boundary detection (column 1, paragraphs 0010-0011).

Allowable Subject Matter

8.   Claims 3 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Burges et al. (PGPUB 2004/0260550) disclose an audio processing system and method for classifying speakers in audio data.

- Heck et al. (USPN 5,950,157) disclose a method for establishing handset-dependent normalizing models for speaker recognition.

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R. Jackson whose telephone number is 571-272-7619. The examiner can normally be reached on Monday-Friday from 5:30am-2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRJ
January 15, 2008

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600